

## Terrestrial Mites of New York (Acarina). IV. Cheyletidae and Cheyletiellidae<sup>1</sup>

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**Abstract:** Ten species of Cheyletidae and 3 species of Cheyletiellidae are presently known from New York. New records of *Acaropsis sollers* Rodendorf, *Cheletomorpha lepidopterorum* (Shaw), *Cheyletus hendersoni* Baker, *C. fortis* Oudemans, *Eucheyletia bishoppi* Baker, *Hemicheyletia wellsi* (Baker), *Neochelacheles messersmithi* Smiley & Williams, and *Prosocheyla oaklandia* (Baker) are listed here. Two species are described as new: *Eucheyletia nidicola*, and *Hemicheyletia newyorkensis*. Diagnostic features, as well as distributional and biological information are given for most species.

This paper is the fourth in a series devoted to a taxonomic survey of terrestrial mites of New York. It reports 10 species of Cheyletidae, of which 2 species are described as new, and 3 species of Cheyletiellidae formerly placed in Cheyletidae. The latter species have been previously reported from New York; they are included here to call attention to their increasing public health significance. They are parasitic, and cause dermatitis in man, and mange in cats, dogs, rabbits and foxes (Olsen & Roth, 1947; Taylor, 1969; Smiley, 1965 & 1970; Hewitt, et al., 1971; van Brunswijk, et al., 1972; Bjarke, et al., 1973; Keh, 1975). The family Cheyletidae includes many species of free-living predaceous mites of economic importance. They have been collected in many habitats such as skins and nests of birds and mammals, insect nests, plants and dried plant material, granaries and barns, and in association with bark beetles and scale insects. Several species have been commonly found in stored food products which are infested by astigmatid mites, upon which the cheyletids prey. They are considered to be effective in controlling stored food product mite populations.

The cheyletids in this report were collected from various habitats in central and eastern New York. The systematics of Cheyletidae follows that of Summers & Price (1970), and Cheyletiellidae that of Smiley (1970).

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## Family CHEYLETIDAE

*Acaropsis sollers* Rodendorf

*Acaropsis sollers* Rodendorf, 1940, Wiss. Ber. Mosk. Staats Univ. Zool. 42: 78, 79. Summers & Price, 1970, Univ. Calif. Publ. Entomol. 61: 61.

The specimens from New York which we have identified as *sollers* seem to fit the description and figures of *docta* (Berlese) as given by Baker (1949). The 2 species may be separated by the length of the dorsal seta on palpal femur, longer than femoral segment in *sollers*, shorter than femoral segment in *docta* (see Summers & Price, 1970: 61).

*Distribution:* *A. sollers* was previously known only from the type-locality, Leningrad, U.S.S.R.; it was subsequently found in California. Four females were collected from a bird nest, Farmingdale, Long Island, New York, December 12, 1975, by M. J. Abbatiello. This is a new record for New York.

*Cheletomorpha lepidopterorum* (Shaw)

*Acarus lepidopterorum* Shaw, 1794, Nat. Misc. 6, pl. 187.

*Cheletomorpha lepidopterorum*, Baker, 1949, Proc. U.S. Nat. Mus. 99: 302. Summers & Price, 1970. Univ. Calif. Publ. Entomol. 61: 49.

This is a long-legged mite with long body and leg setae which are rodlike-serrate and slightly flattened on the end; the tarsus of leg I lacks claws but has a pulvillus; the dorsomedian setae are very small and well differentiated from the dorsolateral setae, 2 pairs on the propodosomal plate and 2-3 pairs on the hysterosomal plate. The female palpal claw is long and slender, and has 1 tooth; that of the male has 2-3 smaller teeth. According to Summers & Price (1970), *lepidopterorum* is a variable species and variants may have been misidentified.

*Distribution:* *C. lepidopterorum* is a widely distributed mite, being found on various importations from all parts of the world. One female was found on underside of a shrub leaf, east Ithaca, New York, September 19, 1970, by B. M. O'Connor. It is the first for New York. Also, 1 female and 1 immature were taken from wild oats-bunny tail packing material from Italy at Copiague, Long Island, August 27, 1975, by M. J. Abbatiello.

*Cheyletus hendersoni* Baker

*Cheyletus hendersoni* Baker, 1949, Proc. U.S. Nat. Mus. 99: 279. Summers & Price, 1970, Univ. Calif. Publ. Entomol. 61: 29.

*C. hendersoni* resembles *trouessarti* Oudemans in many respects, including 3 pairs of small vesicular dorsomedian setae, 1 pair on the propodosomal plate and 2 pairs on the hysterosomal plate. But *hendersoni* is distinctive in having some of the serrate dorsolateral setae long and flagelliform; in *trouessarti* these setae are flattened, spindle-shaped blades with fine barbs. There are only 3 teeth on the palpal claw, and the guard seta on tarsus I is longer than the solenidion.

*Distribution:* Arkansas (type-locality), New Mexico and Colorado. The 4 females collected in New York were from a woodchuck nest, Saratoga, September 9, 1975, by M. D. Delfinado. This is a new record for New York.

*Cheyletus eruditus* (Schrank)

*Acarus eruditus* Schrank, 1781, Enumeratio insectorum Austriae indigenorum: 513.

*Cheyletus eruditus*, Baker, 1949, Proc. U.S. Nat. Mus. 99: 278. Summers & Price, 1970, Univ. Calif. Publ. Entomol. 61: 24.

*C. eruditus* is closely related to *malaccensis* Oudemans, but differs by having 2 similarly developed basal teeth on the palpal claw and 2 setae on the femur of leg IV. *C. malaccensis* has 2 different sized teeth and 1 seta on the femur of leg IV.

**Distribution:** This species is widely distributed. It has been recorded from New York, and described as *Cheyletus doddi* Baker, 1949: 279 from Ithaca. New collections of several males, females and immatures were found in pigeon dung, Farmingdale, Long Island, July 1973; barn debris, Bethlehem, Rt. 144, Albany County, July 2, 1974; ant nest debris, Saratoga, August 29, 1975, all collected by M. D. Delfinado; from wild oats-bunny tail packing material from Italy at Copiague, Long Island, August 27, 1975, collected by M. J. Abbatiello.

*Cheyletus fortis* Oudemans

*Cheletes fortis* Oudemans, 1904, Entomol. Ber. 18: 160.

*Cheyletus fortis*, Baker, 1949, Proc. U.S. Nat. Mus. 99: 280. Summers & Price, 1970, Univ. Calif. Publ. Entomol. 61: 28.

*C. fortis* is difficult to separate from *malaccensis*. The females of *fortis* are distinguished by having one large blunt tooth on the palpal claw; *malaccensis* has a similar large tooth and a small, secondary tooth. The males differ in the number of dorsolateral hysterosomal setae, 5 pairs in *fortis* and 6 pairs in *malaccensis*.

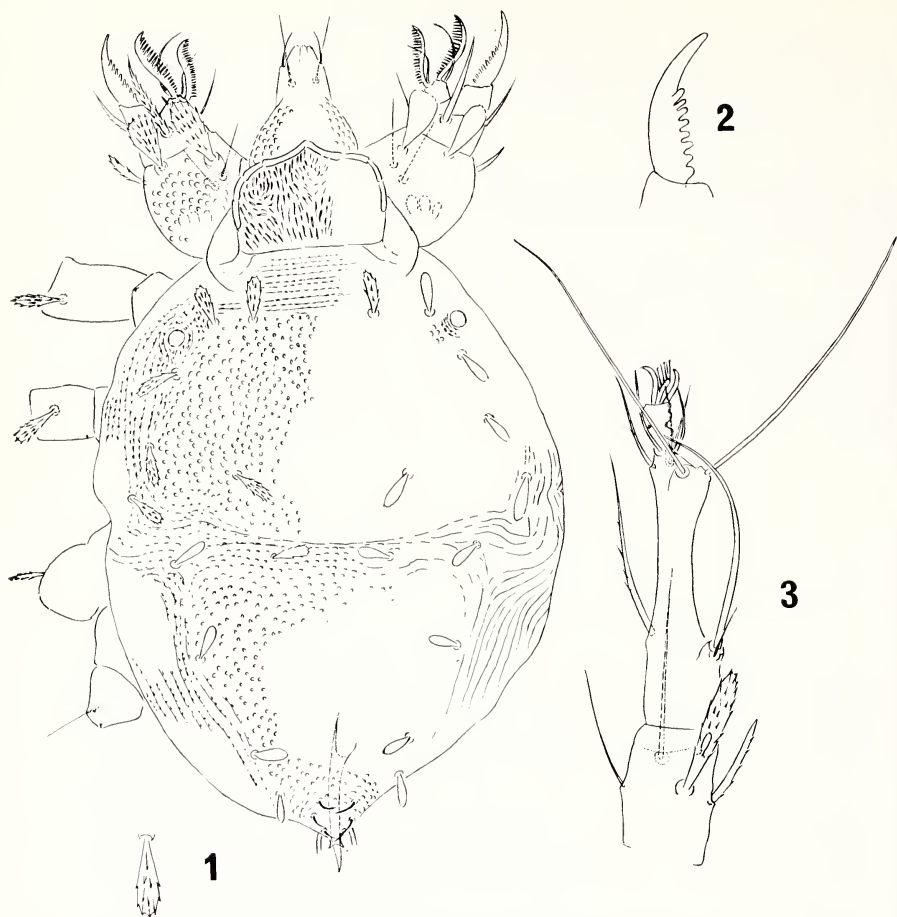
**Distribution:** This species has been intercepted at U.S. Quarantine on many host habitats from Southeast Asia, Japan and Australia. The 2 specimens from New York were collected on a dead adult mealworm from a laboratory culture at Cornell University, Ithaca, March 1969, by Steve Gourley. This is also the first record for North America.

*Eucheyletia bishoppi* Baker

*Eucheyletia bishoppi* Baker, 1949, Proc. U.S. Nat. Mus. 99: 295. Summers & Price, 1970, Univ. Calif. Publ. Entomol. 61: 32.

This species has characters typical of the genus, including the presence of cloudlike setae, and the absence of lenslike eyes. *E. bishoppi* may be recognized from its closely related species, *flabellifera* (Michael), in having palmate-serrate ventral seta of the palpal genu, 5-6 pairs of palmate-serrate dorsolateral and 7-8 pairs of cloudlike dorsomedian setae on the hysterosomal plate, and in having lanceolate-serrate ventral seta on tibia III. *E. asiatica* Volgin is possibly a synonym of *bishoppi*; Summers & Price (1970) separate the 2 species only by the number of cloudlike setae: 7 pairs in *bishoppi* and 8 pairs in *asiatica*. The specimens of *bishoppi* we have examined possess 7-8 pairs of cloudlike setae.

**Distribution:** This mite has been collected in Maryland and California (type-locality). Two females were collected from Tompkins County, New York, March 27, 1975, from nest of *Blarina brevicauda* (Say), by B. M. O'Connor; a new record for the State.



*Hemicheyletia newyorkensis*, n. sp. Figures 1-3. 1, dorsal view of male with detail of seta; 2, palpal claw; 3, tibia-tarsus of leg I.

*Hemicheyletia newyorkensis*, n. sp.

(Figures 1-3)

This new species, described from a male, exhibits the *bakeri* type of body setae, the dorso-median setae being similar in form with the dorsolateral setae. *H. newyorkensis* is distinctive in having the hysterosomal and propodosomal plates being well developed and about equal in size, with similarly narrow clavate-serrate dorsomedian and dorsolateral setae; each plate bears 1 pair of dorsomedian and 4 pairs of dorsolateral setae.

*Male*. Body ovoid, length 287 u, width 166 u. Palpal claw with 8 small, similarly shaped teeth. Outer comb with about 16 teeth, and about as long as palpal claw. Inner comb smaller than outer comb, with about 19 teeth. Palpal femur slightly wider than long, with palmate-serrate dorsal seta. Palpal genu with palmate-serrate seta located along posterior



margin. Tip of rostrum more or less conical, with well developed marginal lamellae. Protegmen covered with small tubercles. Peritremes with 4 or 5 sausage-like links on each side. Tegmen with many longitudinal striae at base breaking into shorter striae anteriorly. Entire body covered by 2 well developed dorsal plates, about equal in size. Dorsal integument covered with tiny tubercles arranged in rows, with tuberculate striae surrounding propodosomal and hysterosomal plates. Lenslike eyes prominent, surrounded by striae. All dorsal setae narrow clavate-serrate. Each plate with 1 pair of dorsomedian and 4 pairs of dorsolateral setae. Dorsomedian and dorsolateral setae in size and shape. Genital-anal setae simple and smooth. Tibia-tarsus of leg I as in figure 3. Solenidion on tarsus I very long, borne on tubercle; guard seta very small.

*Female.* Not known.

*Holotype.* Male, unique, Flanders, Long Island, New York, July 16, 1973, from leaf litter near base of tree, collected by M. D. Delfinado. Deposited in the New York State Museum & Science Service at Albany.

*Hemicheyletia wellsi* (Baker)

*Cheyletia wellsi* Baker, 1949, Proc. U.S. Nat. Mus. 99: 300.

*Hemicheyletia wellsi*, Summers & Price, 1970, Univ. Calif. Publ. Entomol. 61: 15.

*H. wellsi* is recognized by having the dorsomedian setae aberrant or fragmented, very different from the dorsolateral setae; the hysterosomal plate bears 2 pairs of fragmented dorsomedian setae, and the propodosomal plate bears 3 or 4 pairs of similar setae.

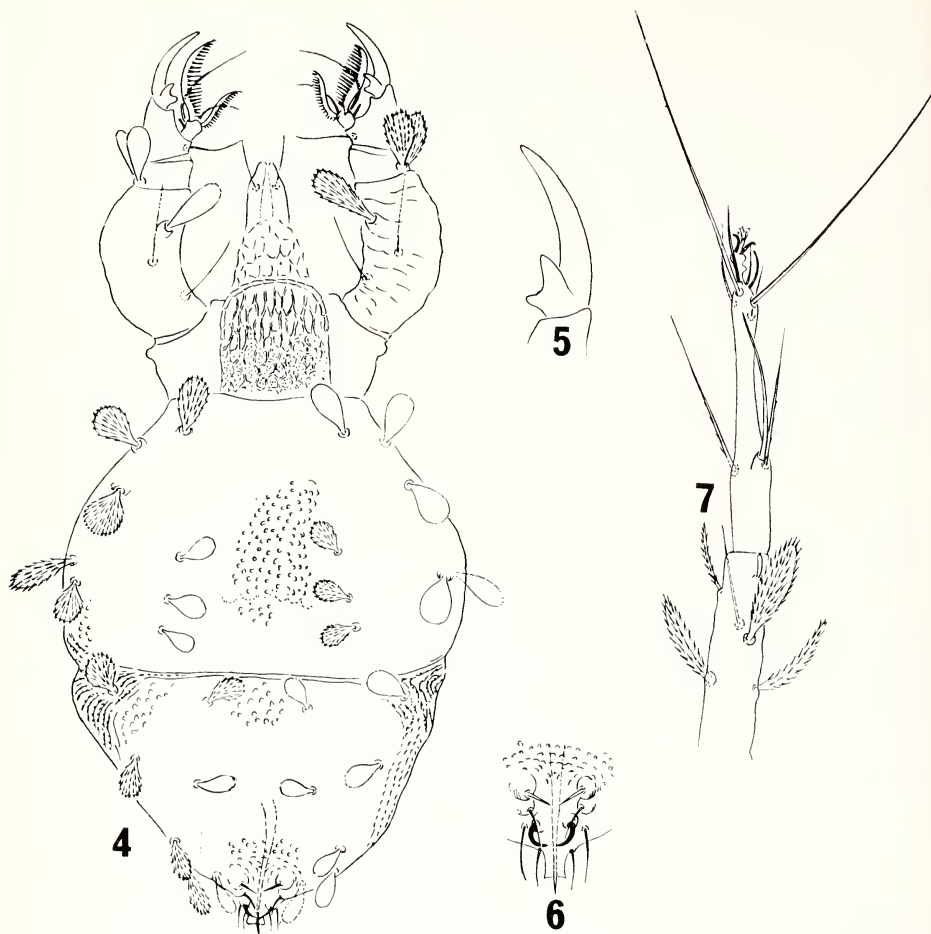
*Distribution:* Azores (type-locality), Puerto Rico, Mexico, Hawaii, West Indies, Cuba, Jamaica, Okinawa, Argentina, Chile and Panama. The 2 specimens in our collection were from treehole debris, Forest Park, Queens, New York, June 1973, collected by M. D. Delfinado. This is also first record for North America.

*Eucheyletia nidicola*, n. sp.

(Figures 4-7)

This species, based only on the male, markedly differs from other members of the genus by the type of the dorsomedian setae: these are palmate-serrate instead of cloudlike, 3 pairs on the propodosomal plate and 2 pairs on the hysterosomal plate; it has 2 large basal teeth on the palpal claw and palmate-serrate ventral seta on the palpal genu.

*Male.* Body elongate ovoid, length including rostrum, 447 u, width 249 u. Palpal claw with 2 large basal teeth. Outer comb with about 16 teeth. Inner comb with about 30 teeth, as long as palpal claw. Palpal femur curved, longer than wide, with palmate-serrate dorsal seta. Palpal genu with palmate-serrate setae. Rostrum and protegmen both elongate and conical, with rostrum protruding. Protegmen with reticulate pattern of ridges. Tegmen also with similar pattern except reticulum broadly elongate anteriorly. Peritremes with 7 or 8 small links on each side. Lenslike eyes lacking. Dorsal integument covered with small tubercles arranged in rows; striae surrounding dorsal plates and between legs formed like tubercles. Propodosomal and hysterosomal plates located close together. Propodosomal plate slightly larger than hysterosomal plate, with 7 pairs of dorsal setae, 3 pairs dorsomedian. Hysterosomal plate also with 7 pairs of dorsal setae, 2 pairs



*Eucheyletia nidicola*, n. sp. Figures 4-7. 4, dorsal view of male; 5, detail of palpal claw; 6, detail of genitalia; 7, tibia-tarsus of leg I.

dorsomedian. Altogether 14 pairs of dorsal setae including humeral setae present. All dorsal setae broadly palmate-serrate, with dorsolateral setae noticeably larger than dorsomedian setae. Genital-anal setae simple and smooth, 1 pair strong and clawlike. Solenidion on tarsus I fairly long; guard setae about as long as solenidion. Tibia-tarsus setae of leg I as figured.

*Female.* Unknown.

*Holotype.* Male, unique, Newcomb, Adirondacks Mts., New York, August 8, 1973, collected from unidentified mammal nest, by M. D. Delfinado. Deposited in the New York State Museum & Science Service collection at Albany.

*Neochelacheles messersmithi* Smiley & Williams

*Neochelacheles messersmithi* Smiley & Williams, 1972, Proc. Entomol. Soc. Wash. 74: 312.

*N. messersmithi*, the only species presently included in the genus, is easily recognized by the long and slender body with 2 dorsal plates marked with elongate ridges or alveoli, each plate bearing 6 pairs of large clavate-serrate setae. The palpal tarsus has 1 comblike and 2 sicklelike setae, and the palpal claw has 5 pointed teeth. The male is not known.

*Distribution:* This mite was originally found on *Bolitotherus cornutus* (Panzer) from West Virginia. Five females were also found on *B. cornutus*, Ithaca, June 1973 & Schuyler County, New York, September 1975, by B. M. OConnor, and 1 female on fungus, Rensselaerville, New York, by M. D. Delfinado. This is a new record for New York.

*Prosocheyla oaklandia* (Baker)

*Cheletogenes oaklandia* Baker, 1949, Proc. U.S. Nat. Mus. 99: 306.

*Prosocheyla oaklandia*, Summers & Price, 1970, Univ. Calif. Publ. Entomol. 61: 55.

*P. oaklandia* has the identifying features of the genus: tarsus I lacks pretarsus and pedicel, and the hysterosoma possesses 1 large plate covering most of the metapodosoma and the opisthosoma. The similarly palmate-serrate dorsomedian and dorsolateral setae readily separates *oaklandia* from other species in the genus. The male palpal femur is considerably longer than that of the female and bears a strong spine on its dorsal surface which resembles the palpal claw.

*Distribution:* This species was previously known only from California (type-locality). Two males were collected from roots and debris, Jones Beach, Long Island, New York, June 1973, by M. D. Delfinado. A new record for the State.

## Family CHEYLETIELLIDAE

Mites of the family Cheyletiellidae are all parasitic of mammals and birds. Three species of *Cheyletiella*, the only genus in the family that is connected with human skin disease, are known to occur in New York. These are:

*Cheyletiella blakei* Smiley, 1970, Ann. Entomol. Soc. Amer. 63: 1072.

This species was collected from cat hair at Ithaca (type-locality); it was recently reported in California causing dermatitis in man which was traced to an infestation of the mite on cats (Keh, 1975).

*Cheyletiella parasitivorax* (Megnin), Baker, 1949, Proc. U.S. Nat. Mus. 99: 270. Smiley, 1970, Ann. Entomol. Soc. Amer. 63: 1075.

This is a cosmopolitan species found on rabbits. The New York records are from Albany and Ithaca.

*Cheyletiella yasguri* Smiley, 1965, Proc. Entomol. Soc. Wash. 67: 76; 1970, Ann. Entomol. Soc. Amer. 63: 1072.

This species has been reported causing dermatitis on dogs (Smiley, 1965; Ewing, et al., 1967; Hewitt, et al., 1971) and as a hyperparasite of a hippoboscid fly (Vercammen-

Grandjean & Rak, 1968). In 1972 van Bronswijk, et al. reported high infestation of *yasguri* in a house where a person complained of severe itching. A dog was the source of the infestation. The New York records are from Mamaroneck (type-locality) and Ithaca, taken from dogs.

The 3 species can be easily separated in both sexes by the shape of the sensory seta of genu I, and by the shape of the aedeagus in the male (Smiley, 1970). We have not studied any of these species.

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